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REMARKS

Claims 67-114 are pending in the application. In the Office Action at hand, those claims are rejected. The rejections are traversed.

In particular, Claims 67, 69, 70, 72-76, 79-82, 84-87, 89, 90, 92-96, 99-102 and 104-114 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Uehara (5,659,376) in view of Yamada (5,508,834). In addition, Claims 68, 71, 88 and 91 are rejected under § 103(a) as being unpatentable over Uehara and Yamada in view of Mizuno (US2002/0098344) and Hopper (4,388,375). Furthermore, Claims 77 and 97 are rejected under § 103(a) as being unpatentable over Uehara in view of Yamada and further in view of Sawa (JP06273760). Finally, Claims 78, 83, 98 and 103 are rejected under § 103(a) as being unpatentable over Uehara, Yamada and Sawa in view of Mori (6,288,700). In response to the § 103(a) rejections, the Applicants respectfully submit that Claims 67-114, as amended, are not obvious in view of Uehara, Yamada, Mizuno, Hopper, Sawa and Mori. Reconsideration is respectfully requested.

The present invention of Claim 67, as amended, recites a display system including a housing having an aperture, and a liquid crystal display panel having an image plane, and opposed transparent substrates defining first and second sides of the display panel. At least one substrate is directly mounted to and within the housing so as to position the display panel in optical alignment with the aperture. A first polarizer is disposed relative to the first side of the display panel. The first polarizer is mounted to be optically aligned with the aperture and mechanically spaced by the housing from the image plane by a distance such that visibility of first polarizer defects to a viewer is minimized.

Claims 67, 84-87 and 104-106 have been amended to recite "at least one substrate being directly mounted to and within the housing so as to position the display panel in optical alignment with the aperture". In addition, Claims 107-110 have been amended to recite that "the first polarizer is mechanically spaced by the housing from the image plane and mechanically secured to the housing in a manner where adhesion is not required", and Claims 111-114 have been amended to recite "mechanically spacing the first polarizer relative to the first side of the display and mechanically securing the first polarizer to the housing in a manner where adhesion is not required". Support for these amendments is found at least in FIGs. 2-6 as well as on page 5, line 27 through page 7, line 20 of the Specification as originally filed. No new matter or new considerations are introduced.

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The following arguments include some discussions that were previously presented, and also introduce new arguments for further addressing the Examiner's rejections. Referring to the embodiment of the present invention depicted in FIG. 2, the display panel 306 can be mounted and enclosed within the housing 304/308 in a manner where one or both of the transparent substrates of the display panel 306 can be directly mounted to and within the housing 304/308, and in optical alignment with the aperture and the first polarizer 302.

On the other hand, typically in the prior art, the transparent substrates of the display panel are first mounted to an intermediate assembly or frame that is separate from the housing, and then the intermediate assembly or frame is mounted to the housing. The intermediate assembly or frame in the prior art is needed for properly aligning the display panel due to dimensional irregularities of the transparent substrates.

However, in the present invention, the Applicants have been able to obtain proper alignment without using an intermediate assembly or frame, by directly mounting in a suitable manner or means, at least one transparent substrate of the display panel 306 to the housing 304/308. The elimination of an intermediate assembly or frame can reduce inventory, simplify the assembly process, and can result in cost savings.

Uehara is an example of such prior art having an intermediate assembly or frame. Uehara discloses in FIG. 2 an LCD apparatus having a liquid crystal panel 101 which is mounted to an intermediate fixing plate 112 by elastic resin 113. The intermediate fixing plate 112 is then mounted to a frame member 114 of the housing by elastic resin 115 for obtaining the proper positioning, alignment and securement of the liquid crystal panel 101 within the housing. As a result, neither of the glass substrates of the liquid crystal panel 101 in FIG. 2 are directly mounted to the housing. Instead, the intermediate fixing plate 112 is mounted to the housing.

FIGs. 12-16 of Uehara depict other embodiments in which an elastic sponge 161 appears sandwiched between the housing and the liquid crystal panel 101 for preventing dust intrusion and for vibration absorption. However, the elastic sponge 161 is mounted to the housing but not to the liquid crystal panel 101. The elastic member 321 in FIG. 23 is employed in a similar manner and is also not mounted to the liquid crystal panel. Therefore, the glass substrates of the liquid crystal panels in the embodiments of FIGs. 12-16 and 23 of Uehara are not directly mounted to the housing. Instead, the intermediate fixing plate is mounted to the housing for providing the alignment of the liquid crystal panel 101.

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The text of Uehara discloses that the intermediate fixing plates are not part of the housing. For example, column 10 lines 3-40 of Uehara describes the fixing plate as part of a liquid crystal panel unit which is separate from the housing and becomes installed within the housing. This distinction that the intermediate fixing plate is not part of the housing is also reflected in the claims which recite them as separate components. For example, Claim 10 recites "said display panel is attached to a panel-supporting member, and the panel-supporting member is attached to the housing via a first elastic member" (where Claim 10 uses the term panel-supporting member to describe the intermediate fixing plate). The Examiner acknowledges this distinction by stating on page 7 of the Office Action that he does not assert that the fixing plate 112 in FIG. 2 of Uehara is part of the housing.

Yamada discloses in FIG. 7 a display having a liquid crystal cell 1 with transparent cover members 6 and 7 that are spaced from the liquid crystal cell 1. Polarizers 8 and 9 are mounted to the continuous exterior surfaces of transparent cover members 6 and 7 to be out of the depth of focus. The structure of the embodiment is similar to that shown in FIG. 5 where polarizers 8 and 9 are shown adhered to the exterior surfaces of cover members 6 and 7. As can be seen, the polarizers 8 and 9 are not mounted over apertures and the liquid crystal cell 1 is not mounted within a housing. The cover members 6 and 7 are merely attached to opposite surfaces of the liquid crystal cell 1 and cannot be considered a housing.

Accordingly, Claims 67, 69, 70, 72-76, 79-82, 84-87, 89, 90, 92-96, 99-102 and 104-114, as amended, are not obvious in view of Uehara and Yamada, since neither reference, alone or in combination, teaches or suggests "a liquid crystal display panel having an image plane, and opposed transparent substrates defining first and second sides of the display panel, at least one substrate being directly mounted to and within the housing so as to position the display panel in optical alignment with the aperture", as recited in base Claim 67, as amended and similarly in independent or base Claims 84-87 and 104-106, as amended.

In addition, Uehara does not teach or suggest, "the first polarizer is mechanically spaced by the housing from the image plane and mechanically secured to the housing in a manner where adhesion is not required" as recited in Claims 107-110, as amended, and similarly in method Claims 111-114, as amended. FIG. 2 of Uehara depicts the edges of protective plate 111 and the polarizer 118 as being spaced apart from the side walls of the recess in plate 125 so that there can be no mechanical gripping by the side walls of the recess. Uehara discloses an orientation on column 6, lines 33-34 which states "a large size panel is generally used in an upright position as

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in a desk top work processor . . .'. In order for FIG. 2 of Uehara to be positioned in an upright position, adhesives would be required for securing the polarizer 118 or plate 111 in place to prevent them from falling out. The Examiner states on page 7 of the Office Action that an upright orientation is not required for the liquid crystal panel to be operational. However, this is ignoring the teachings of column 6, lines 33-34, which, in view of the structure depicted in FIG. 2, would require the use of adhesives.

In contrast, referring to FIGs. 2-4 of this application which depict one embodiment of the present invention, the first polarizer 302 can be mechanically spaced from the image plane of the display 306 and mechanically secured to a first housing element 304. The first housing element 304 can mechanically secure or capture the first polarizer 302 within a receptacle 312. The receptacle 312 can be a recess within the first housing element 304, which surrounds an opening or aperture passing through the first housing element 304. This forms a recessed outer peripheral shoulder and rim (FIG. 4) for capturing the first polarizer 302 and mounting the polarizer over the aperture. Therefore, Claims 67, 69, 70, 72-76, 79-82, 84-87, 89, 90, 92-96, 99-102 and 104-114, as amended, are in condition for allowance. Reconsideration is respectfully requested.

Mizuno discloses an optical adhesive film formed from polyester including foreign particles having a maximum size of about 20 μm or more. In addition, Hopper discloses that a polarizer can be formed of polyester.

Claims 68, 71, 88 and 91 are not obvious in view of Uehara, Yamada, Mizuno and Hopper since none of these references, either alone or in combination, teach or suggest "a liquid crystal display panel having an image plane, and opposed transparent substrates defining first and second sides of the display panel, at least one substrate being directly mounted to and within the housing so as to position the display panel in optical alignment with the aperture", as recited in base Claim 67, as amended and similarly in base Claim 87, as amended. Therefore, Claims 68, 71, 88 and 91 are in condition for allowance. Reconsideration is respectfully requested.

Sawa discloses a backlight having a light source 14, and light diffusing parts 11, 34 and 35, which are positioned in front of the light source 14.

Claims 77 and 97 are not obvious in view of Uehara, Yamada and Sawa since none of these references, either alone or in combination, teach or suggest "a liquid crystal display panel having an image plane, and opposed transparent substrates defining first and second sides of the display panel, at least one substrate being directly mounted to and within the housing so as to position the display panel in optical alignment with the aperture", as recited in base Claim 67, as

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amended, and similarly in base Claim 87, as amended. Therefore, Claims 77 and 97 are in condition for allowance. Reconsideration is respectfully requested.

Mori discloses a light emitting flat panel device employed as a backlight which has laterally positioned LEDs Or, 4B and 4B, for directing multicolor light into a series of lateral guide routes 2 in a board 1 for emission from a series of light emitting holes 7 in the light guide routes 2.

Claims 78, 83, 98 and 103 are not obvious in view of Uehara, Yamada, Sawa and Mori since none of these references, either alone or in combination, teach or suggest "a liquid crystal display panel having an image plane, and opposed transparent substrates defining first and second sides of the display panel, at least one substrate being directly mounted to and within the housing so as to position the display panel in optical alignment with the aperture", as recited in base Claim 67, as amended, and similarly in base Claim 87, as amended. Therefore, Claims 78, 83, 98 and 103 are in condition for allowance. Reconsideration is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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